Rhodora

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 11. May, 1909. No. 125.

NOTES UPON THE FLORA OF NEWFOUNDLAND.

EDWIN H. EAMES.

IN quest of recreation in a region of interesting botanical possibilities Dr. Charles C. Godfrey and the writer journeyed to western Newfoundland in mid-July 1908. A study of pertinent literature proved the country little known except near the coast, larger streams and along the railway.

Few botanists have given any attention to the west coast, as it has until recently been comparatively inaccessible. In that region nearly all available information has been through the efforts of Rev. A. C. Waghorne, sometime resident at Birchy Cove, who, in pursuit of his missionary work, made many excursions to the outer coast and northward. As much of the material thereby accumulated still remains unworked in the light of present day knowledge it is not surprising that we are able to add to the known flora of the island upwards of fifty species and varieties of the higher plants, in part gathered within an area more or less familiar to our predecessor.

Our itinerary was as follows: — July 20–25, Aug. 9–10, about Humber Arm, Bay of Islands, in the vicinity of Birchy Cove; July 27–31, Aug. 7–8, shores, islands and lower mountain slopes about York Harbor, Bay of Islands; July 31–Aug. 6, summits and higher slopes of Blow-me-down Mts. immediately south of Bay of Islands (highest recorded altitude about 680 m.); Aug. 11–14, head of Bay St. George; Aug. 15, a forenoon at Port aux Basques.

In these areas the rocks and soils are mainly potassic in their essential influence upon plant-life, with occasional more or less calcareous composition or admixture, rarely an impure limestone. As similar conditions appear to prevail elsewhere our observations bear directly upon the general flora. It should be remarked that a great area of serpentine forms the eastern part of Blow-me-down Mts. and some others visible to the north, but lack of time prevented their exploration.

Of some 600 numbers collected, representing about 400 species and varieties, it seems advisable to notice about half as possessing more or less real interest for other gleaners in the same or related fields. The flora is of much interest and, most decidedly, is worthy of long-continued field study.

For valued assistance in the determination of some otherwise doubtful species, and for other information, it is a pleasure to acknowledge the kindness of Prof. M. L. Fernald who was already familiar with the allied flora of the Gaspé coast and mountains.

PHEGOPTERIS POLYPODIOIDES Fée. Common in several places about Bay of Islands, Humber Arm and Bay St. George.

P. DRYOPTERIS (L.) Fée. Occasional in the same general area.

ASPLENIUM FILIX-FOEMINA (L.) Bernh. Frequent or locally common nearly or quite to treeline.

POLYSTICHUM BRAUNII (Spenner) Fée. Rather rare or local about Bay of Islands and Humber Arm. At one station it occurred in two extreme forms, as regards the sori, with little tendency to intergrade: one with unusually large sori and indusia, the former becoming confluent at maturity; the other with the same organs comparatively minute but apparently of about the same number. There seem to be no correlative characters upon which to separate these forms.

ASPIDIUM FILIX-MAS (L.) Sw. Border of wet woods near Birchy Cove, at about 65 m. alt., with the preceding species, *Onoclea Struthiopteris* and other ferns.

CYSTOPTERIS FRAGILIS (L.) Bernh. Up to treeline in the mountains. Common at low altitudes. A form closely simulating *Woodsia obtusa* near sea-level along Humber Arm.

ONOCLEA STRUTHIOPTERIS (L.) Hoffm. Rare. See note on *Aspidium.* No indications of fruiting fronds on Aug. 10 although the colony in this strangely conjoint habitat is vigorous.

SCHIZAEA PUSILLA Pursh. Sphagnous marsh near the railway, Bay St. George, at about 10 m. alt. The plants were somewhat smaller than is usual in similar situations in New Jersey and as is sometimes the case there they were more or less associated with *Aster nemoralis.* As perhaps particularly indicating the situation may be named *Xyris montana, Juncus stygius, var. americanus* and *Bartonia* *iodandra*, any of which may sometime lead to other "finds" of this fern. The island abounds in situations of the same character, this tract alone covering many square miles. Of other stations in Newfoundland that of Waghorne was "In bogs, borders of ponds, the quarry N. W. of the railway. . . .about 70 miles from the Bay of Islands"[1] therefore about 125 miles from our station. The station of La Pylaie probably was on the French Islands.

OSMUNDA CINNAMOMEA L. Occasional. Occurs almost to treeline in the mountains. Fertile fronds more or less sterile at the tip and sterile fronds with more or less incised inner pinnules were collected at York Harbor and at 400 m. alt. in the mountains.

EQUISETUM SYLVATICUM L. A colony of lusty plants with black stems, at sea-level near Birchy Cove.

E. FLUVIATILE L., forma LIMOSUM (L.) Clute was abundant in shallow ponds at about 450 m. alt.

LYCOPODIUM SELAGO L. and var. APPRESSUM Desv. Near sea-level at York Harbor; frequent in the mountains.

L. ANNOTINUM L., var. PUNGENS Desv. Occasional and well-marked about mountain summits.

L. OBSCURUM L., var. DENDROIDEUM (Michx.) D. C. Eaton. York Harbor, on slope at 60 m. alt.

L. SITCHENSE Rupr. Occasional in moist grassy or shaded places above treeline to the highest summit.

SELAGINELLA SELAGINOIDES (L.) Link. More or less common in moist sphagnum and on wet rocks, especially in hilly districts and in the mountains.

ISOËTES — probably *I. echinospora* Dur., var. *Braunii* (Dur.) Engelm. A few plants in a small pond at 450 m. alt.

TAXUS CANADENSIS Marsh. Occurs almost to treeline in the mountains.

PINUS STROBUS L. This, the most valuable evergreen, has been almost exterminated in the region traversed, where the fir, white and black spruce are still abundant but seldom large enough to be of much value.

JUNIPERUS COMMUNIS L., var. MONTANA Ait. Not uncommon on exposed rocky slopes up to the highest mountain summit.

J. HORIZONTALIS Moench. Frequent in various moist to dry exposed situations at all altitudes.

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[1] See Bull. Torr. Cl. xxiii, 354.

Sparganium angustifolium Michx. Sea-level, Bay St. George and mountain ponds at 450 m. alt.

S. simplex Huds. Definitely noted at sea-level, Bay St. George, but in Newfoundland it appears to intergrade with the last.

S. hyperboreum Laestad. Plentiful in shallow water and on muddy shores of several ponds in the mountains at about 450 m. alt. Also near sea-level, Bay St. George.

Potamogeton bupleuroides Fernald. Pool slightly above tide-water, Bay St. George.

P. pectinatus L. Abundant in a cove, head of Bay St. George.

Alopecurus geniculatus L. Occasional near sea-level, throughout.

Oryzopsis asperifolia Michx. Rocky slope, Bay of Islands.

Agrostis alba L., var. maritima (Lam.) Meyer. Brackish meadows and sandy soils, Bay St. George.

Agrostis borealis Hartm. Near sea-level to bleak mountain summits, where it is dwarfed. It appears to connect with forms referred to *A. hiemalis* (Walt.) B S P. but this is a question for further study.

Agrostis borealis Hartm., var. **macrantha**, n. v., spiculis abnormaliter elongatis; lemmatibus glumas valde superantibus 4–6 (–8) mm. longis; arista supra mediam partem varie saepissime apicem versus affixa interdum brevi obsoletave.— Spikelets abnormally elongated; lemmas much exceeding the glumes, 4–6, rarely 8, mm. long; awn variously inserted above the middle, usually near the apex, sometimes short or obsolete.— Shelves and crevices on dry cliffs at about 175 m. alt., Blow-me-down Mts., 27 July, 1908: Eames & Godfrey.

Calamagrostis Pickeringii Gray. At all altitudes throughout especially above treeline. Local.

C. canadensis (Michx.) Beauv. Occasional at all altitudes.

C. canadensis (Michx.) Beauv., var acuminata Vasey. With the species and elsewhere in the mountains, but usually not well marked.

C. hyperborea Lange. Rare on the higher mountain slopes and summits.

Ammophila arenaria (L.) Link. In sand on and near the beach, Bay St. George.

Holcus lanatus L. Meadows, Birchy Cove.

Deschampsia flexuosa (L.) Trin. Dry soil at all altitudes, but rather local.

DANTHONIA SPICATA (L.) Beauv. Occasional at all altitudes.

SPARTINA MICHAUXIÁNA Hitchc. Tidal shore, Governor's Island, Bay of Islands.

S. GLABRA Muhl., var. ALTERNIFLORA (Loisel.) Merr. Tidal shore, head of Bay St. George.

CYNOSURUS CRISTATUS L. Moist roadside, Birchy Cove.

POA ALPINA L. Occasional. Near sea-level, Bay of Islands, some plants were 5 dm. tall with proportionately large panicles.

POA TRIVIALIS L. Birchy Cove.

GLYCERIÁ GRANDIS Wats. Plentiful in a hillside meadow at Birchy Cove.

G. BOREALIS (Nash) Batchelder. Bay St. George.

FESTUCA RUBRA L., var. SUBVILLOSA Mert. & Koch. Meadows, Bay of Islands. Local.

FESTUCA RUBRA L., var. SUBVILLOSA Mert. & Koch, forma **vivipara,** n. f., pubescentia ut apud varietatem sed lemmatibus elongatis foliaceisque.— Pubescence as in the variety, the lemmas elongated and leaflike.— Meadow near sea-level on Governor's Island, Bay of Islands, 8 Aug., 1908: Eames & Godfrey, and about slides and cliffs up to the highest mountain summit.— Exactly parallel with var. *prolifera* Piper, which was not seen although the species occurs throughout.

SCIRPUS NANUS Spreng. Brackish marshes, Bay St. George.

S. HUDSONIANUS (Michx.) Fernald. Bay of Islands and in the mountains. Occasional at all altitudes.

S. SUBTERMINALIS Torr. Pond near sea-level, Bay St. George.

S. RUFUS (Huds.) Schrad. Abundant in brackish marshes, Bay St. George. Also on sandy shores of a fresh-water pond near sea-level, in the same locality.

S. OCCIDENTALIS (Wats.) Chase. Governor's Island, Bay of Islands.

S. RUBROTINCTUS Fernald. Bay of Islands and Humber Arm.

S. ATROCINCTUS Fernald. Bay of Islands.

S. ATROCINCTUS Fernald, var. BRACHYPODUS Fern. Bay of Islands.

ERIOPHORUM CALLITRIX Cham. From sea-level to 500 m. in the mountains.

E. CALLITRIX Cham., var. ERUBESCENS Fernald. More or less common at all altitudes, throughout.

E. TENELLUM Nutt. Occasional at low altitudes.

E. ANGUSTIFOLIUM Roth. From sea-level to mountain meadows above treeline.

E. angustifolium Roth., var. majus Schult. Near sea-level, Bay of Islands.

E. virginicum L. Frequent. In the mountains to 500 m. altitude.

Rynchospora alba (L.) Vahl. Throughout, especially at low altitudes.

Carex hormathodes Fernald, var. invisa (W. Boott) Fernald. Bay St. George.

C. leporina L. Meadow, Birchy Cove.

C. exilis Dewey. Gravelly shore of a pond at about 450 m. alt.

C. brunnescens Poir. Up to 375 and 425 m. alt.

C. trisperma Dewey. Mountain woods at 375 m. alt.

C. salina Wahl., var. cuspidata Wahl. Bay St. George.

C. rigida Good. Rare on mountain summits.

C. rigida Good., var. Bigelovii (Torr.) Tuck. Frequent in the mountains.

C. lenticularis Michx. Bank of woodland stream at 375 m. alt.

C. aurea Nutt. Springy bank at sea-level, Bay of Islands.

C. pauciflora Lightf. Frequent from near sea-level to 550 m. alt.

C. leptalea Wahl. Frequent, especially at low altitudes.

C. polygama Schk. Governor's Island, Bay of Islands.

C. gracillima Schwein. Bay of Islands.

C. gracillima Schwein., var. humilis Bailey. Occasional about Bay of Islands, where it appears to be a well-marked variety.

C. scirpoidea Michx. Exposed rocky slopes and bare summits, from 60 m. alt. upward.

C. deflexa Hornem. A few plants on a bleak mountain summit at 550 m. alt.

C. vaginata Tausch. Sparingly on a dry mountain summit at 500 m. alt.

C. paupercula Michx. Meadows and banks of streams at and above treeline in the mountains.

C. paupercula Michx., var. irrigua (Wahl.) Fernald. Frequent in bogs and meadows at all altitudes.

C. limosa L. Near sea-level, Bay St. George, and in a mountain bog at about 450 m. alt.

C. rariflora Smith. Common in a boggy marsh near sea-level, Governor's Island, Bay of Islands; occasional in similar places and about ponds in the mountains, to 450 m. alt.

C. castanea Wahl. Brookside thicket at 425 m. alt.

C. ARCTATA Boott. Wet border of coniferous woods at 375 m. altitude.

C. MICHAUXIANA Boeckl. Occasional. In the mountains to 450 m. altitude.

C. SAXATILIS L., var. RHOMALEA Fernald. Wet gravelly shore of a pond at about 450 m. altitude.

C. SAXATILIS L., var. MILIARIS (Michx.) Bailey. Sphagnous swamp near Birchy Cove.

ERIOCAULON SEPTANGULARE Withering. Shallow water of pools, 450–500 m. altitude.

XYRIS MONTANA Ries. Muddy borders of ponds and pools near sea-level, Bay St. George.

JUNCUS BUFONIUS L., var. HALOPHILUS Buch. & Fern. Moist brackish sand, Bay St. George.

J. LONGISTYLIS Torr. Forming a compact colony along a gravelly tidal shore, Bay of Islands. Not before known from east of Lake Huron.

J. PELOCARPUS Mey. Bay St. George.

J. ARTICULATUS L. Low altitudes throughout.

J. STYGIUS L., var. AMERICANUS Buchenau. Sphagnous bogs at all altitudes. Locally plentiful.

LUZULA CAMPESTRIS (L.) DC., var. FRIGIDA Buch. At low altitudes throughout.

TOFIELDIA PALUSTRIS Huds. Moist to dry calcareous slides and ledges, 60–80 m. alt., York Harbor.

T. GLUTINOSA (Michx.) Pers. Frequent in seepy places above treeline.

CLINTONIA BOREALIS (Ait.) Raf. Occasional throughout except at high altitudes.

SMILACINA STELLATA (L.) Desf. Moist or dry places near sea-level, Bay of Islands.

S. TRIFOLIA (L.) Desf. Wet sphagnum at all altitudes.

MAIANTHEMUM CANADENSE Desf. Occasional up to the highest summit, 680 m. alt.

STREPTOPUS AMPLEXIFOLIUS (L.) DC. Frequent in woods at all altitudes.

S. ROSEUS Michx. In similar places and more plentiful.

IRIS SETOSA Pall., var. CANADENSIS Foster, forma **zonalis**, n. f., foliis transverse lineatis; lineis albis vel flavido-albis interdum plus minusve rubro-marginatis.—Leaves with transverse white or yellowish white bands; these bands sometimes more or less bordered with red.—Sea-beach near Bay St. George Hotel and moist sand in its vicinity, head of Bay St. George, 12 Aug., 1908: *Eames & Godfrey*.

Sisyrinchium angustifolium Mill. Plentiful on Seal Island, Bay of Islands. Occasional at low altitudes throughout.

Cypripedium acaule Ait. Bay St. George.

Habenaria hyperborea (L.) R. Br. Several places about Bay of Islands and Humber Arm.

H. dilatata (Pursh) Gray. Abundant in some meadows at Birchy Cove. Occasional throughout.

H. clavellata (Michx.) Spreng. Shrubby bog at 125 m. alt. near Birchy Cove.

H. obtusata (Pursh) Richards. Frequent or locally common in mossy woods throughout.

H. orbiculata (Pursh) Torr. Bay of Islands and Bay St. George. Apparently rare.

H. blephariglottis (Willd.) Torr. Plentiful in a bog at Bay St. George. Many of the plants are var. *holopetala* (Lindl.) Gray. Lip, especially of the variety, often less than 6 mm. long.

H. psycodes (L.) Sw. Occasional at low altitudes. Usually 2–3 dm. tall.

Pogonia ophioglossoides (L.) Ker. More or less frequent in low bogs throughout.

Calopogon pulchellus (Sw.) R. Br. As the last.

Arethusa bulbosa L. As the preceding.

Spiranthes Romanzoffiana Cham. Frequent, especially at low altitudes.

Epipactis repens (L.) Crantz, var. ophioides (Fern.) A. A. Eaton. Rare about Bay of Islands but abundant in mossy spruce woods near Bay St. George Hotel.

Listera cordata (L.) R. Br. Frequent or sometimes common in mossy woods at all altitudes.

L. convallarioides (Sw.) Torr. As the last.

Microstylis unifolia (Michx.) B S P. Rare. Shrubby swamp near Birchy Cove; open sphagnous slope in the mountains at 450 m. altitude.

Salix vestita Pursh. Summit of a slide with northerly exposure at 680 m. altitude.

S. Uva-ursi Pursh. Common on mountain summits and some much lower exposures.

Myrica Gale L. Up to slopes well above treeline in the mountains.

Betula microphylla Bunge. Frequent on mountain slopes above treeline. Not before recorded from eastern North America although Prof. Fernald says "it is abundant as a subalpine large shrub or small tree on Mt. Albert and Table-top, Gaspé Co., Quebec, and we have it [in Gray Herb.] from Saguenay Co., Quebec." In Newfoundland it was seen only as shrubs about a meter or so tall, often forming thickets.

B. nana L., var. Michauxii (Spach) Regel. Common in wet places above treeline.

Comandra livida Richards. Occasional at low altitudes throughout.

Polygonum Roberti Loisel. Abundant in damp sand inside the beach, at one locality, head of Bay St. George. Not before definitely recorded from America.

P. viviparum L. About the higher mountain cliffs and on a slide at 70 m. altitude near York Harbor.

Salicornia europaea L., var. prostrata (Pall.) Fernald. Abundant on some of the tidal shores and marshes at Bay St. George.

Salsola Kali L. Bay St. George.

Spergularia rubra (L.) J. & C. Presl. Along the railroad at Port aux Basques, where probably introduced.

Spergula arvensis L. Abundant in some cultivated fields at Birchy Cove.

Sagina nodosa (L.) Fenzl. Locally plentiful on the pebbly beach, Bay St. George.

S. procumbens L. At low altitudes throughout.

Arenaria lateriflora L. Abundant on Seal Island, Bay of Islands; occasional elsewhere in the same locality.

Stellaria borealis Bigel. Low altitudes throughout.

S. humifusa Rottb. Abundant on some of the tidal shores and marshes, Bay St. George.

Nymphaea advena Ait., var. variegata (Engelm.) Fernald. Shallow ponds up to 500 m. altitude.

Ranunculus repens L. Often plentiful about the settlements.

Thalictrum polygamum Muhl., var. hebecarpum Fernald. Bay of Islands.

Anemone parviflora Michx. Moist to dry calcareous cliffs and slides at 60–80 m. alt., Bay of Islands.

Coptis trifolia (L.) Salisb. Common to treeline.

Caltha palustris L. Occasional throughout.

Actaea rubra (Ait.) Willd. Frequent or occasional throughout; in the mountains to treeline.

A. rubra (Ait.) Willd., forma neglecta (Gillman) Robinson. In similar situations at a few places in the mountains. On a shrubby slope at about 175 m. alt. it grew in dense clumps of many stems — 27 fruitful stems in one instance from a compact mass of knotted rootstocks. When growing singly the rootstocks were practically identical with those of the species, near which it grew in one case. In the locality first mentioned the species did not occur but was present some distance down the slope. This form appears to be a mere matter of color. *A. alba* is not known to occur on the island.

Cochlearia officinalis L. One plant on the beach, Bay St. George.

Drosera longifolia L. Occasional or frequent in swamps and on muddy shores at all altitudes.

Saxifraga aizoides L. Moist slaty rocks at sea-level, Humber Arm.

Mitella nuda L. Occasional at all altitudes to treeline.

Parnassia parviflora DC. Moist bank at sea-level, Bay of Islands.

Ribes oxyacanthoides L. Bay of Islands.

R. lacustre (Pers.) Poir. Bay of Islands and Humber Arm; locally common at low altitudes.

R. prostratum L'Her. Occasional throughout.

R. triste Pall. Occasional throughout.

Pyrus sitchensis (Roem.) Piper. Bay of Islands and Humber Arm. This, or perhaps in part *P. americana*, occurs throughout the region traversed.

P. arbutifolia (L.) L. f., var. atropurpurea (Britt.) Robinson. What appears to be this variety was found with and grading into *P. melanocarpa* at Bay St. George.

Amelanchier canadensis (L.) Medic. Bay of Islands and Humber Arm.

A. oligocarpa (Michx.) Roem. Frequent in the Mts.

Filipendula Ulmaria (L.) Maxim. Birchy Cove.

Geum rivale L. Occasional at low altitudes.

Rubus Chamaemorus L. Bay of Islands and southward, in sphagnous bogs at all altitudes. Somewhat local.

AGRIMONIA STRIATA Michx. York Harbor.

ROSA VIRGINIANA Mill. Bay of Islands.

VICIA CRACCA L. Birchy Cove.

LATHYRUS MARITIMUS (L.) Bigel. As observed at Bay of Islands and Bay St. George this species-group was perplexing, many plants being markedly pubescent, others much less so or glabrous. Later studies have shown that Seringe, who was familiar with the two extremes, interpreted the *Pisum maritimum* of Linnaeus as the common *pubescent* plant of northern Europe and Asia, distinguishing as a variety, *P. maritimum*, "*β. glabrum* (Ser. mss.) foliis glabris.— In Canada."[1] In Newfoundland as elsewhere on the northern coast the pubescent plant is rather more common than the plant with glabrous foliage (as well as stem, etc.). Southward and about the lakes of the interior (Oneida L., the Great Lakes, L. Winnipeg) and on the coast of British Columbia, Washington and Oregon the glabrous plant alone is found. The latter, therefore, seems to be a well developed American variety and should be known as *L. maritimus* (L.) Bigel., var. **glaber** (Seringe) n. comb.

L. PALUSTRIS L., var. PILOSUS (Cham.) Ledeb. Frequent about Bay of Islands.

EMPETRUM NIGRUM L., var. ANDINUM (Philippi) DC. Local, although sometimes plentiful, on dry exposed slopes and summits from about 40 m. altitude at Port aux Basques to the higher mountain summits, usually in fine angular gravel about rocks and ledges. It is closely prostrate, usually in compact mats, in marked distinction to the habit of the species. In Newfoundland this variety appears to be farther removed from the species than elsewhere known in northeastern America, especially in the smaller mature fruit (3–5 mm. in dia.) which is *light* red, in large part a mere tint of the translucent skin covering the juicy almost colorless pulp. Other characters are less tangible and, like the tomentum, appear to be due to its habitat. Such characters are restricted annual growth and smaller leaves less rugose in drying or remaining turgid and lucid. Leaves of the season have comparatively and actually longer and more slender petioles. In studying various specimens of the species it was noted that on vigorous stems the leaves sometimes are exactly verticillate, more often subverticillate, in 3^s–6^s with marked internodes of 4–5 mm. It is *polygamous*.

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[1] Ser. in DC., Prodr. ii. 368 (1825).

Nemopanthus mucronata (L.) Trel. Bay of Islands and Humber Arm; frequent, sometimes to treeline.

Rhamnus alnifolia L'Her. Occasional.

Malva moschata L. Birchy Cove.

Hypericum boreale (Britt.) Bickn. Bay St. George.

H. virginicum L. Bay of Islands and Bay St. George.

Viola cucullata Ait. Bay of Islands and in the mountains at 450 m. altitude.

V. Selkirkii Pursh. Bay of Islands and Humber Arm.

V. pallens (Banks) Brainerd. Bay of Islands and in the mountains to 425 m. altitude.

V. incognita Brainerd. Throughout except at the highest altitudes.

V. labradorica Schrank. Occasional in the mountains to the highest summits.

Shepherdia canadensis (L.) Nutt. Bay St. George.

Epilobium palustre L. Occasional throughout.

E. palustre L., var. monticola Haussk. Frequent throughout. Often grading into the species or not well marked.

E. adenocaulon Haussk. Bay of Islands and Humber Arm.

E. Hornemanni Reich. Occasional in the mountains to treeline.

Aralia hispida Vent. Bay of Islands.

Aralia nudicaulis L. Bay St. George.

Conioselinum chinense (L.) BSP. Occasional throughout, from sea-level to treeline.

Angelica atropurpurea L. Seal Island, Bay of Islands.

Cornus stolonifera Michx. Bay of Islands to treeline in the mountains.

Pyrola minor L. Bay of Islands and Humber Arm.

P. secunda L., var. obtusata Turcz. Bay of Islands and Bay St. George; less common than the species.

P. chlorantha Sw. Bay of Islands, Humber Arm and Bay St. George.

P. americana Sweet. A few plants about slides and cliffs on Little Blow-me-down Mt., at about 70 m. altitude.

Monotropa uniflora L. Bay of Islands. Not rare at Bay St. George.

M. Hypopitys L. Bay St. George.

Rhododendron canadense (L.) BSP. Low or moderate altitudes throughout.

R. LAPPONICUM (L.) Wahl. A few plants on calcareous ledges at 60 m. alt., Bay of Islands.

LOISELEURIA PROCUMBENS (L.) Desv. At about 40 m. alt., Port aux Basques, to mountain summits.

KALMIA ANGUSTIFOLIA L. Common throughout.

K. POLIFOLIA Wang. As the last, especially in the mountains.

CASSIOPE HYPNOIDES (L.) D. Don. Cliffs with northerly exposure, 680 m. altitude.

ANDROMEDA GLAUCOPHYLLA Link. Bogs at all altitudes throughout.

CHAMAEDAPHNE CALYCULATA (L.) Moench. As the last.

EPIGAEA REPENS L. Woods throughout.

ARCTOSTAPHYLOS UVA-URSI (L.) Spreng. Occasional at all altitudes.

A. ALPINA (L.) Spreng. Barren rocky hills at 40–50 m. alt., Port aux Basques; mountain slopes and summits. Fruit becoming black, plentiful.

CHIOGENES HISPIDULA (L.) T. & G. Low altitudes throughout.

GAYLUSSACIA DUMOSA (Andr.) T. & G. Bay St. George.

G. BACCATA (Wang.) C. Koch. Bay of Islands; Bay St. George.

VACCINIUM PENNSYLVANICUM Lam. At low altitudes throughout.

V. PENNSYLVANICUM Lam., var. ANGUSTIFOLIUM (Ait.) Gray. Exposed rocks and mountains throughout.

V. ULIGINOSUM L. As the last. Common.

V. OVALIFOLIUM Sm. Moist rocky woods at 400 m. alt.

V. OXYCOCC~~U~~S L. Throughout. o/

V. MACROCARPON Ait. Bay St. George.

DIAPENSIA LAPPONICA L. Rocky hills at Port aux Basques within 40 m. of sea-level, and on mountain summits. Local.

PRIMULA FARINOSA L., var. MACROPODA Fernald. Frequent on calcareous rocks and banks at sea-level and low altitudes.

P. MISTASSINICA Michx. As the last.

TRIENTALIS AMERICANA (Pers.) Pursh. Frequent in woods; occasional on mountain summits.

GENTIANA AMARELLA L., var. ACUTA (Michx.) Herder. Sandy field, Bay St. George.

HALENIA DEFLEXA (Sm.) Griseb., var. BRENTONIANA (Griseb.) Gray. Near sea-level at Port aux Basques and about Bay St. George.

BARTONIA IODANDRA Robinson. Muddy shores and sphagnous bogs about Bay St. George. Abundant in one bog, associated with *Melampyrum lineare*.

Menyanthes trifoliata L. Ponds up to 450 m. alt.

Myosotis scorpioides L. Birchy Cove.

Scutellaria lateriflora L. Bay of Islands and Humber Arm.

Scutellaria galericulata L. As the last.

Galeopsis Tetrahit L. Locally plentiful at Birchy Cove.

Lycopus uniflorus Michx. Bay of Islands.

Scrophularia nodosa L. A thrifty colony of many plants on rocky bank of Humber Arm near Birchy Cove. Not before recorded from North America.

Chelone glabra L. Bay St. George.

Mimulus moschatus Dougl. In several wet places, Birchy Cove.

Castilleja pallida (L.) Spreng., var. septentrionalis (Lindl.) Gray. Calcareous slide at 60 m. alt., Bay of Islands.

Melampyrum lineare Lam. Plentiful in a bog at Bay St. George.

Euphrasia Randii Robinson. Throughout, especially at low altitudes. In dry exposed places passing into var. Farlowii Robinson.

Utricularia vulgaris L., var. americana Gray. Bay St. George.

U. intermedia Hayne. Bay St. George.

U. cornuta Michx. Frequent throughout.

Pinguicula vulgaris L. Throughout.

Orobanche uniflora L. Bay of Islands; rare.

Galium kamtschaticum Steller. Several places on mountain slopes up to treeline.

G. labradoricum Wiegand. Bay of Islands.

G. asprellum Michx. Bay of Islands.

G. triflorum Michx. Bay of Islands and Humber Arm; frequent.

Lonicera caerulea L., var. villosa (Michx.) T. & G. In the mountains to 550 m. alt.— above treeline.

Viburnum pauciflorum Raf. More or less common about Bay of Islands and Humber Arm.

V. cassinoides L. Occasional throughout, up to treeline.

Sambucus racemosa L. York Harbor.

Lobelia Dortmanna L. Pond at 475 m. alt.

Eupatorium purpureum L., var. maculatum (L.) Darl. Edge of bog, Governor's Island, Bay of Islands.

Solidago hispida Muhl. At all altitudes. Frequent on mountain slopes and summits.

S. macrophylla Pursh. Woods at all altitudes; sometimes in open bogs.

S. MACROPHYLLA Pursh, var. THYRSOIDEA (Mey.) Fernald. Upper slopes in the mountains.

S. ULIGINOSA Nutt. Bay St. George.

S. UNILIGULATA (DC.) Porter. At all altitudes. Frequent on moist slopes and some summits in the mountains.

ASTER RADULA Ait. Common at low altitudes; occasional on the upper mountain slopes. Passes freely into var. STRICTUS (Pursh) Gray.

A. PUNICEUS L., var. OLIGOCEPHALUS Fernald. At and near treeline in the mountains.

A. UMBELLATUS Mill. Shrubby brookside at about 375 m. altitude.

A. NEMORALIS Ait. Common at low altitudes; occasional above treeline in the mountains.

ERIGERON HYSSOPIFOLIUS Michx. Moist calcareous cliffs on Little Blow-me-down Mt., from 50 m. upward.

ANAPHALIS MARGARITACEA (L.) B. & H., var. OCCIDENTALIS Greene. Plentiful at York Harbor.

GNAPHALIUM SYLVATICUM L. Along the railway, Birchy Cove.

SENECIO VULGARIS L. Common in settled districts.

S. AUREUS L. Occasional throughout.

S. BALSAMITAE Muhl. Bay of Islands and Humber Arm. Occasional at all altitudes in the mountains, usually more or less depauperate on the summits and in dry soils — var. PAUPERCULUS (Michx.) Fernald.

CIRSIUM MUTICUM Michx. Bay of Islands and in the mountains to treeline

C. MUTICUM Michx., var. SUBPINNATIFIDUM (Britt.) Fernald. Bay of Islands.

CENTAUREA NIGRA L. All settled districts.

C. NIGRA L., var. RADIATA DC. Birchy Cove.

LEONTODON AUTUMNALIS L. Birchy Cove. Much less common than var. PRATENSIS (Link) Koch.

PRENANTHES TRIFOLIOLATA (Cass.) Fernald. Bay of Islands, especially at low altitudes.

P. NANA (Bigel.) Torr. Open places at all altitudes in the mountains.

BRIDGEPORT, CONNECTICUT.

NOTES ON SOME LICHENS FROM THE GASPÉ PENINSULA.

Lincoln Ware Riddle.

Through the courtesy of Prof. J. F. Collins I have recently had the opportunity of studying a set of Lichens collected by him in company with Prof. Fernald in the Gaspé region of eastern Quebec. The collection laid no claim to being exhaustive, as the specimens were mostly picked up incidentally, attention being given chiefly to other groups of plants. Most of the numbers as might be expected were typical boreal species, such as *Cetraria nivalis* (L.) Ach., *Nephroma arcticum* (L.) Fr., *Cladonia deformis* (L.) Hoffm., *C. gracilis* var. *chordalis* (Flke.) Schaer., and *C. turgida* (Ehrh.) Hoffm. But among the set were some species of special interest.

The first two species are of interest on account of their geographical distribution in North America. Prof. Fernald has already called attention to the interesting discovery in the Gaspé Peninsula of species of Phanerogams known elsewhere only from the Rocky Mountains or the Pacific Coast. A similar distribution is illustrated by the following species of Lichens.

Biatora globifera (Ach.) Fr. This species is widely distributed in the Pacific Coast and Rocky Mountain region, material having been examined from the following localities: — Washington (*Brandegee*), Oregon (*Suksdorf*), California (*Bolander, C. R. Orcutt, W. G. Farlow, H. E. Hasse*), Nevada (*S. Watson*), Colorado (*Brandegee, F. E. Clements.*) The only station hitherto known east of the Rocky Mountains is Smuggler's Notch, Mt. Mansfield, Vermont, where it was collected by C. G. Pringle. To this may now be added Bic, Rimouski County, Quebec, July 4, 1907 (*Collins & Fernald*, no. 4864).

Lecidia coeruleonigricans (Lightf.) Schaer. (*Lecidia vesicularis* (Hoffm.) Ach.) This is apparently a rarer species than the preceding. Material has been examined from Utah (*S. Watson, J. A. Lapham*), Colorado (*C. G. Pringle*), California (*C. R. Orcutt*). The only station known in eastern North America is Bic, Quebec, where it was collected by C. G. Pringle in 1880, and again in the same locality by Collins and Fernald (no. 4847a) July 4, 1907.

The next two numbers are boreal species which are little known south of the St. Lawrence River.

SOLORINA CROCEA (L.) Ach. Table-top Mountain, Gaspé County, Quebec, Aug. 10, 1906 (*Collins & Fernald*, no. 4502a). Widely distributed in British America, but not previously recorded from south of the St. Lawrence and no further herbarium material seen.

SPHAEROPHORUS FRAGILE Pers. Table-top Mountain, Gaspé County, Aug. 5, 1906 (*Collins & Fernald*, no. 4365). This is only the third station known south of the St. Lawrence, the others being Mt. Katahdin, Maine (*Blake, E. D. Merrill*) and the White Mountains, N. H. (*Tuckerman, W. G. Farlow, Clara E. Cummings*).

The two species next to be mentioned are represented in the collection by unusual forms.

PLACODIUM ELEGANS (Link) DC. var. GRANULOSA Schaer. According to the description no. 4844 from Ile au Massacre, Bic, is this variety. No other herbarium specimens have been seen, and the variety has not been previously recorded from North America. It differs from the typical form in having the cortex of the central portion of the thallus broken up into a mass of pale granules. From the variety *trachyphyllum* of Tuckerman it is quite distinct in being truly foliose and loosely attached to the substratum.

PHYSCIA CILIARIS (L.) DC. var. CRINALIS Schaer. This is a comparatively well-known British American lichen, material having been examined from the following localities: — Newfoundland (*Delise*), Nova Scotia, Gaspé Coast, Ontario (*Macoun*), Bic, Quebec (*C. G. Pringle*), Lake Superior (*C. G. Loring*). It is rare from the United States, material having been seen only from Vermont (*C. C. Frost, C. E. Faxon*) and Michigan (*M. L. Wilson*). No. 27 of Calkins's North American Lichens from Tennesee, bearing this name, is *Physcia leucomela* (L.) Michx. Collins & Fernald's no. 5138 from Bic is the characteristic form of the variety. But no. 5268 from Bonaventure Island, off the easternmost point of the Peninsula, is a very peculiar form, being erect-fruticose, and occurring in intricately branched, congested tufts, giving the specimens an entirely different appearance from any other material examined, so different in fact that I failed to recognize it and I am indebted to Prof. Farlow for pointing out its relationships.

The last species worthy of notice is at the same time the most puzzling. It may be called provisionally

COLLEMA PLICATILE Schaer. since it agrees most closely with the only specimens bearing this name in the Tuckerman Herbarium. One of these is from North Baltimore, New York (*E. C. Howe,* 1871); the other from Willoughby Lake, Vermont (*W. G. Farlow,* 1880). The specimens now under consideration were collected by Collins & Fernald at Ile au Massacre, Bic, July 3, 1907 (no. 4842). The members of the group of *Collema pulposum* are variable and are not well-known in North America. Prof. Fink distributed specimens from Iowa under the name of *Collema plicatile,* but they are different from the specimens cited above. Dr. Herre, in his account of the Lichens of the Santa Cruz Peninsula, California (Proc. Wash. Acad. Sci. **7**: 378) lists a plant under the name of *Collema plicatile* Acharius, the determination being verified by Zahlbruckner. Judging from the description, however, the California plant is also different from the material in the Tuckerman Herbarium. If this doubt in regard to the North American material of *Collema plicatile* is taken into consideration, all that can be said is that the Bic specimens apparently agree with the Tuckerman conception of the species.

Specimens of all of the species mentioned are in Prof. Collins' herbarium and duplicates are in my own herbarium.

Wellesley College, Wellesley, Massachusetts.

RECENT NOMENCLATORIAL CHANGES IN THE GENUS CORALLORRHIZA.

Oakes Ames.

C. maculata and C. Wisteriana.

The adoption of the International Rules governing botanical nomenclature by the editors has produced in Gray's *New Manual of Botany* a number of changes, in the names of the genera and species, the origin of which, in the *Orchidaceae* at least, is readily traceable. In the majority of cases these changes have been made in strict accordance with the laws of priority, and the identity of the plants in question indisputably ascertained. The disappearance, however, of *Corallorrhiza multiflora* Nutt., from among the familiar names used in the sixth edition of the Manual, while necessitated by the rules adopted at Vienna in 1905, deserves explanation in view of the fact that the identity of the plant, designated by the new name (*C. maculata* Raf.), has been obscured by a difference of opinion. Prof. E. L. Greene assumes that Rafinesque's *C. maculata* is conspecific with *C. Wisteriana*, a species described by Conrad in 1829, while I, reasoning from the same data, maintain that it more properly includes *C. multiflora*. Unfortunately the only evidence that may be considered is of a purely literary nature, as no type specimen of Rafinesque's species is known to exist. Rafinesque published two brief notes on the subject in the *American Monthly Magazine* (1817) which in the order of their appearance are printed below.

"*Cymbidium corallorhizon* is again introduced in the American Flora, after being left off by Pursh, and is distinguished from the *C. odontorhizon*, by its oblong acute and undivided lip; both are stated to have a white leafless sheathed stem. We apprehend there is here an oversight, or a new species is probably meant; we know of a third one unnoticed by Pursh, which has yellow stems, and a spotted elliptic obtuse crenate lip. We think those plants may form a peculiar genus very distinct from *Cymbidium*, to which the name *Cladorhiza* may be given: our new species shall be called *Cl. maculata*." Am. Mon. Mag. **1**: 429 (1817).

In the second note Rafinesque goes into more details and gives the following description.

"*Coralorhiza maculata*. Roots branched palmate articulate, stem round, sheaths acute; raceme loose, flowers drooping, sepals lanceolate, nearly obtuse, labellum recurved elliptic white, red spotted, auriculated on each side of the base, toothed and obtuse at the apex.— Obs. The genus *Coralorhiza* has been established by Brown, in the second edition of Hortus Kewensis: it is very different from *Cymbidium*, and its habit is very peculiar, owing to the branched shape of the fleshy roots and the pedunculated flowers without bracteas. Three or four species of this genus grow in the United States, all different from the European species. This grows in the shady woods of Long-Island near Flatbush, Flushing, Oyster-bay, &c; it blossoms in July and August, the whole plant is yellowish, size about one foot." Am. Mon. Mag. **2**: 119, 120 (1817).

From an examination of these two notes it becomes quite apparent that the one published first is scarcely a valid botanical description. It would prove of very slight use in the identification, absolutely without doubt, of any known species of Corallorrhiza which has a spotted lip. After reading the second note, however, it becomes clear that if the *C. maculata* therein described is the same species as the one referred to in the first note, there is sufficient evidence for a scrutinizing study of the situation. The second note, in fact, offers the only satisfactory clue that is at all reliable, by which we may hope to obtain knowledge of the species which Rafinesque had in hand. It would be purely gratuitous to assume that the plant of the first note published by Rafinesque was a distinct species from that of the second note. It is not likely that Rafinesque's extraordinary powers of discernment would have let him confuse two such distinct species as the *C. multiflora* of the sixth edition of the Manual and *C. Wisteriana.*

After eliminating *Corallorrhiza striata,* which, from its range and striated flowers, is negligible in the present discussion, let us, for the sake of convenience separate the species of Corallorrhiza of the eastern United States into two sections, one characterized by an entire, the other by a three-lobed lip. In the first section we find *C. odontorhiza* and *C. Wisteriana,* and in the second *C. trifida* and *C. multiflora.* If we now turn to Rafinesque's description of *C. maculata* we find the lip clearly described in the second note as being "recurved elliptic white red spotted, auriculated on each side of the base, toothed and obtuse at the apex." A flower with an "auriculated" lip surely does not suggest either of the species in the first section of our arbitrary division. And if we attempt to identify it with the species of the second section we find that it is not in agreement with *C. trifida,* and is, therefore, either a distinct species or conspecific with *C. multiflora.*

If all the evidence is examined it will be found that Rafinesque in his second note, and Conrad in the original diagnosis of *C. Wisteriana* gave details relative to the flowering season and distributions of their plants which are worthy of careful consideration by one who wishes to ascertain the identity of *C. maculata* and *C. Wisteriana.* Conrad says of his plant that it "flowers the beginning of the 5th month" (*May*). Rafinesque, on the other hand, had to do with a species which blooms in *July* and *August,* in the "shady woods of Long Island, near Flatbush, Flushing, Oyster-bay, etc." An examination of numerous specimens of *C. Wisteriana* has conclusively proved to my mind that it is a *vernal* species, which has a flowering season from *February* into *May,* and that it is, for the most part, a southern species, which is fairly common in several of the states of the far south reaching into

Florida and westward into Texas. Furthermore, *C. Wisteriana* is *extremely rare* northward. When I prepared the monograph of that species for the first volume of *Orchidaceae* I examined many specimens to ascertain its geographical range, and found none from farther north than Georgia and Alabama, with the exception of the type, although in the literature devoted to it I found several reports of more northern localities almost all of which were without much doubt based on erroneously identified material. With the exception of a very questionable report for New England, the only northern station which deserves serious consideration is the type station near Philadelphia. No authentic material has ever been found in New York that I have been able to discover, while *C. multiflora* is common there. In the distribution of the species prepared for Gray's New Manual I judged that Pennsylvania and southward was the only statement warranted by my investigation. Rafinesque's second note would seem to refer to a plant of not uncommon occurrence in New York, otherwise he would not have named three stations and then have indicated, by "&c.," that others were known to him. Besides it would be most remarkable if in 1817 *C. Wisteriana* were common in the vicinity of New York and at the present time unknown from there.

It is also noteworthy that Rafinesque makes no mention of Philadelphia in either of his notes. In view of this Prof. Greene's remarks with which he concludes his brief reference to *C. maculata* in *Leaflets* (**1**: 237) are of interest. He says: "As a frequent plant in woods on the outskirts of the Philadelphia of the early nineteenth century, it might be expected that Rafinesque would have been the first to note its character, for he was familiar with the Philadelphia region at that time."

In the seventh volume of *Torreya* on page 78, Homer D. House takes exception to Prof. Greene's conjectures about the locality from which Rafinesque's plants of *C. maculata* were obtained and calls attention to the second note relative to the species in which Rafinesque referred definitely to the localities on Long Island. House concludes his brief account in the following words: "This (the Long Island station) gives a definite type locality for the species and it would be interesting to know whether the species is still to be found in the localities indicated by him (*Rafinesque*)."

In view of the foregoing discussion, in which I have laid especial stress on the season of flowering and on the geographical distribution of the two species under consideration there is no evidence which in my opinion warrants the conclusion that *C. Wisteriana* is conspecific with *C. maculata.* The data furnished by Rafinesque's second note, however, are conclusive evidence, that his *C. maculata* is conspecific with *C. multiflora,* and is on account of its priority the proper name for the species.

CORALLORRHIZA TRIFIDA *Chatelain.*

Robert Brown in Aiton's *Hortus Kewensis,* ed. 2, vol. 5, p. 209 (1813) first used the combination *Corallorrhiza innata,* but J. J. Chatelain had in 1760, in a small pamphlet of fifteen pages, entitled *Specimen Inaugurale de Corallorhiza,* properly made the combination *C. trifida.* Chatelain's combination, through the rules of priority, is, therefore, valid while Brown's becomes a synonym. Linnaeus in *Species Plantarum,* edition of 1753, page 945, published the combination *Ophrys corallorhiza* so that the first specific name of our plant is "*corallorhiza,*" but the transfer of the Linnaean specific name to the genus Corallorrhiza gives the combination *Corallorrhiza corallorhiza* which was first made by Karsten in 1880–1883. According to Section 6, Art. 55 of the International Rules for Botanical Nomenclature specific names which repeat the generic name must be rejected. If we apply this rule in the present case we must reject Karsten's combination and reinstate that of Chatelain. As Chatelain's pamphlet is rare and may not be readily accessible to those who wish to study the subject in detail, the following transcript from the first half of Page 8, on which the combination *C. trifida* is made, may prove of value.

SPECIES PRIMA.

Trifida. CORALLORHIZA nectarii labio trifido.

> Ophris bulbis ramosis flexuosis, caule vaginato, nectari. labio trifido. LINN. sp. plant. pag. 945. No. 2 & Flori Suec. Edit. 2. pag. 317. No. 816.
>
> Neottia bulbis reticulatis, nectarĩi labio trifido. LINN. Act. Ups. 1740. pag. 34. Flor. Suec. Edit. 1. pag. 267. No. 743. & WACHENDORFF. pag. 316. No. 886.
>
> Neottia radice reticulata. LINN. Flor. Lapp. pag. 247. No. 315. ROYEN. Lugdb. pag. 15. No. 1.

NORTH EASTON, MASSACHUSETTS.

RECOGNITION OF CORYLUS ROSTRATA AND CORYLUS AMERICANA.— It is frequently desirable to recognize these two species in the winter, or in the spring while in flower. The writer has found the following characters useful in this respect.

C. AMERICANA. Staminate catkins almost always peduncled; their scales tipped with a long reddish point which bears hairs that project little or not at all beyond itself; buds decidedly obtuse and rounded at the apex; twigs frequently, but not always, bearing scattered bristly hairs. In flower, the bracteoles behind each scale of the staminate catkin project conspicuously beyond the lateral margins of the latter, and the previously noted apical characters of the scale still hold.

C. ROSTRATA. Staminate catkins sessile or nearly so, their scales with a short light-colored tip which bears a tuft of long hairs very much exceeding it; buds narrower and decidedly acute; twigs never bearing the long bristle-like hairs except possibly at the nodes. In flower, the bracteoles in the staminate catkin project slightly or not at all beyond the lateral margins of the scale, which latter is usually more arched.— K. M. WIEGAND, Wellesley College.

VIOLA BRITTONIANA AT CONCORD, MASSACHUSETTS.— Some of my botanical friends inform me that the violet with deeply-incised leaves now known as *Viola Brittoniana* Pollard is considered of rather sparse and local distribution in eastern Massachusetts. In 1839 the late Edward Tuckerman, then a student in the Harvard Law School, found the plant (then considered a phase of *V. palmata*) "abundant, in Concord in this county. The ground was drier where it grew than the plant [*V. palmata*] commonly affects"; and a sheet of his material is preserved at the Gray Herbarium. Mr. Walter Deane has specimens of it which he collected in 1887 on the banks of Concord River not far from the Old Manse, where he was staying at the time. I do not remember to have noticed it in that particular locality, but I have found it commonly enough in a number of places two or three miles further down the river and really abundantly in the meadows lying just to the eastward of Ball's Hill, where there must be hundreds if not thousands of plants for they are spread over a considerable area, growing for the most part only a yard or two apart and sometimes within less than a foot of one another. Here, as elsewhere, they shun the wetter portions of the meadows and occur most plentifully along slightly elevated ridges or benches of comparatively dry land bordering closely on the river. On these the grass is regularly cut in summer or early autumn; when the violets bloom the following spring it has not grown sufficiently to screen them wholly from one's view and for a brief season their flowers give a pleasing tinge of bluish purple to spots where they most abound. I am informed that others have found the species in some abundance in similar habitats along the Concord River in Carlisle and Bedford.— William Brewster, Cambridge, Massachusetts.

Lathyrus palustris, var. pilosus (Cham.) Ledeb. in Massachusetts.— During the past summer *Lathyrus palustris*, var. *pilosus* (Cham.) Ledeb. was found by the writer growing in some abundance along the roadside at Woodbury's, Ipswich Sand Dunes. It has previously been reported by White (Bull. Torr. Bot. Club *21*, 448, 1894) from Lubec, Maine (*Oakes*), as *L. myrtifolius*, var. *macranthus*; and has been collected by Fernald at Cutler, Maine. So far as the writer is aware these are the only previously known stations for this variety in New England.— K. M. Wiegand, Wellesley College.

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